

Application No. 10/615,811

Docket No. 4535A

REMARKSAmendment to Title

The title of the application has been amended to more accurately reflect the invention.

Claim Amendments:

Claim 1 has amended to correct a typographical error.

Restriction:

Applicants respectfully note that the proper status of claims 1-42 and 56-59 is that they are canceled. These claims were canceled at the time the divisional application was filed, rendering the restriction requirement unnecessary.

Allowable Claims:

Applicants note with appreciation that claims 46-55 are indicated as being allowable.

Request for Formal Drawings:

Applicants respectfully submit that formal drawings were submitted with the original patent application. Review of the formal drawings is respectfully requested.

Claim Rejections:

Claims 43-45 were rejected under 35 U.S.C. 103(a) as being unpatentable over Denniston (U.S. Patent No. 6,481,222) in view of Dunne (U.S. Patent No. 5,667,560) for the reasons provided on pages 2-4 of the official action. Applicants respectfully traverse this rejection.

The combined teachings of Denniston and Dunne fail to teach the invention claimed in claim 43 and dependent claims 44 and 45. Claim 43 recites a method for cleansing the atmosphere by a vehicle powered by an internal combustion engine. The method includes drawing first and second streams of atmosphere as recited in a) and b) of the claim; c) heating the second stream; d) providing a heat wheel having channels with a

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coating of activated carbon having a micropore porosity, a density of at least 0.5 g/in³ and a mean particle size not greater than 25 microns; e) passing the first stream through the heat while to adsorb VOCs contained in the atmosphere onto channels occupying, at any given time, a first position of the wheel; f) passing the second heated stream through the channels occupying a second position at any given time; g) directing the second heated stream with the VOCs desorbed from the wheel to the gaseous emission treating system of the vehicle; and h) rotating the wheel before the channels in the first position become saturated with VOCs.

The Examiner states that Denniston teaches each element of claim 43 except for the coating of activated carbon having the recited micropore porosity, particle size and density. The Examiner cites Dunne as teaching the use of activated carbon on a heat wheel having the recited properties, citing Figs. 1-3; col. 8, lines 64-68; and col. 9, lines 1-22). Applicants respectfully disagree with both of these positions.

Denniston fails to teach or suggestion several limitations of claim 43. First, Denniston does not teach or suggest heating a second stream to a temperature in the range of 150° to 300° C. Second, Denniston pertains to a vehicle humidification/dehumidification system. There is absolutely no teaching or suggestion in Denniston that the system can be used or modified to adsorb and desorb VOCs on the wheel. Third, Denniston does not teach or suggest desorbing VOCs with a second stream of heated atmosphere to the gaseous emission treating system (for example, a catalytic converter) of the heating system. The disclosure relied upon by the Examiner, namely col. 69, lines 47-67; col. 70, lines 1-51 and Figures 78 and 79, pertains to a heat recovery system for recovering heat from several components, including a catalytic converter to supply heat to the dehumidification system. Particularly, Denniston discloses placing the catalytic converter in an air shroud to direct hot air surrounding the catalytic converter to the dehumidification apparatus (col. 70, lines 13-15). In claim 43, a stream of heated air is directed through the heat wheel channels having VOCs adsorbed thereon, which is then directed to the gaseous emission treating system to further process the VOCs. The structure described by Denniston does not serve any VOC removal function because the air is directed around the catalytic converter towards the dehumidification device, whereas in claim 43, the heated air is directed in the opposite direction and to the vehicle

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emission treating system. Finally, Denniston does not teach rotating the wheel so that before the channels in the first position dependent portion become saturated with VOCs they are rotated into a second position dependent portion where the VOCs are desorbed.

Dunne fails to cure any of the deficiencies noted above in Denniston. Even assuming that the skilled artisan would be motivated to combine the teachings of Denniston and Dunne, which is denied, Dunne fails to teach any of the features that are lacking in Denniston. First, the teaching relied upon by the Examiner in Dunne is not taught or suggested by Dunne. There is absolutely no discussion of an activated carbon having a micropore porosity, a density of 0.5 g/in³ and a mean particle size of greater than 25 microns. Applicants admit that Dunne mentions at col. 6 lines 14-15 that adsorbent wheel systems typically incorporate solid adsorbents such as activated carbon, activated clays, silica gel, activated alumina and molecular sieves such as zeolites. But then, Dunne teaches that zeolites are a preferred compound for VOC remediation. There is no teaching in Dunne to utilize an activated carbon having the properties recited by applicants. In addition, applicants demonstrate the importance of the particle size of the carbon in the specification in Example 7.

Further Dunne, does not supply any of the other teachings missing from Denniston, notably, directing the second stream of heated atmosphere with VOCs desorbed from the wheel to the gaseous emission treating system of the vehicle. Dunne also does not teach rotating the wheel so that before the channels in the first position dependent portion become saturated with VOCs they are rotated into a second position dependent portion where the VOCs are desorbed. Moreover, Dunne teaches passing different air streams through three different portions of the wheel, which teaches away from the claimed invention. For at least these reasons, claim 43, and dependent claims 44 and 45 are patentable. Applicants respectfully request withdrawal of the rejection.

Reconsideration of the above-referenced patent application in view of the foregoing is respectfully requested. It is not believed that any fees are due. However, if any fees are due, the USPTO is authorized to charge Deposit Account No. 50-3329.

The undersigned was authorized by Richard A. Negin, Reg. No. 28,649, an attorney of record in the subject application, to prepare and file this Amendment on

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behalf of the Assignee. Correspondence should continue to be directed to Chief Patent Counsel, Engelhard Corporation, 101 Wood Avenue, P.O. Box 770, Iselin, NJ, 08830-0770.

Respectfully submitted,

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By: 

Scott S. Servilla
Reg. No. 40,806
Telephone (732) 815-0404

Engelhard Corporation
101 Wood Avenue
P.O. Box 770
Iselin, NJ, 08830-0770